

## MULTICOMPONENT FOOD PRODUCT AND METHODS OF MAKING AND USING THE SAME

### SPECIFICATION

[0001] This application is a continuation of co-pending application Ser. No. 09/570,646 filed May 15, 2000, which is a continuation-in-part of U.S. Pat. No. 6,117,477 issued Sep. 12, 2000.

### FIELD OF THE INVENTION

[0002] This invention relates to food products and, more particularly, to multicomponent dry pet or animal food products that significantly improve palatability.

### BACKGROUND OF THE INVENTION

[0003] Semi-moist edible products are known in the art. Such products, for example, include those made by adding a water based soft component to a dry component. The water based component is typically stabilized using a variety of gelling agents, sugars, salts, glycols, and/or by using heat.

[0004] U.S. Pat. No. 4,190,679 describes a dual-textured pet food containing a soft moist meaty portion containing 5-25% moisture with a water activity of 0.5-0.90. U.S. Pat. No. 3,916,029 describes a center filled pet food having a semi-moist inner matrix in an outer pastry shell. The inner matrix has a moisture content of 15-40% by weight and a water activity below about 0.85. Antimycotic agents are required to prevent mold growth. U.S. Pat. No. 3,922,353 relates to a center filled product which has a meat based filling having a water activity greater than about 0.90 and a water content greater than about 50% by weight. Pressure cooking, acidification and antimycotics are required. U.S. Pat. No. 4,006,266 relates to a two-component pet food having a soft component made of water, sugar, proteinaceous adhesive, animal protein source, vegetable protein source, fat, and a plasticizing agent. The soft component has between 11-14% moisture and a water activity of 0.60-0.75, and is subjected to elevated temperatures of 215-180° F. The above U.S. patents are herein incorporated by reference in their entirety.

[0005] U.S. Pat. No. 4,508,741 describes a pet food having a doubly coated core. The core is made primarily of a farinaceous material. U.S. Pat. No. 4,847,098 describes a dual textured food article having a relatively hard phase in contact with a relatively soft phase. The soft phase is a low fat content, water-in-oil emulsion made of a dispersed aqueous or syrup phase, at least one emulsifier, and a minor continuous oil phase. Ingredients for the soft portion include water, various grain and meat solids, propylene glycol, and high fructose corn syrup to help control water activity. U.S. Pat. No. 4,900,572 describes a dual textured pet food that is made by co-extrusion. The soft textured inner component is subjected to heat and pressure and has water added for expansion. U.S. Pat. No. 4,795,655 is a dual portion pet food in which an inner portion is softer than the outer hard dry portion. The soft portion contains egg solids, flour, meal, sugar and 30-40 wt % water. The finished product is baked to ensure stability. U.S. Pat. No. 4,364,925 is a dual textured dog chew designed to provide a long life bone that is molded into various shapes and may include baking to promote chewing. In this patent, cellulosic, collagen and protein fibers are combined with a cowhide derived binder to form

a hard composition. The soft composition is not well defined. The above U.S. patents are herein incorporated by reference in their entirety.

[0006] U.S. Pat. No. 5,695,797 describes a coextruded pet food product in which the outer casing has a moisture content of between 20% and 40% and the filling represents between 30% and 40% of the total volume. The product requires a preservative such as phosphoric acid, an additive to lessen the action of the water, an anti-mould ingredient, and an antioxidant because the product of U.S. Pat. No. 5,695,797 has a high moisture content. The above U.S. patent is herein incorporated by reference in its entirety.

[0007] U.S. Pat. Nos. 5,641,529 and 5,449,281 describe various equipment for preparing shaped co-extruded products and three-dimensional shapes. The above U.S. patents are herein incorporated by reference in their entirety.

[0008] U.S. Pat. No. 4,273,788 describes a bulk mixture of hard and soft pet foods. The hard food is in the form of chunks and the soft food is in the form of slender strands. The soft strands are described as being semi-moist. Water is added to the soft composition prior to extrusion. The extruded composition is subject to an elevated temperature of approximately 215-280° F., thereby lowering the moisture content to about 11-14%. The above U.S. patent is herein incorporated by reference in its entirety. U.S. Pat. No. 4,574,690 describes an apparatus and process for producing a co-extruded food product having a filling food material surrounded by a molded food material. U.S. Patent No. 4,025,260 describes a food extrusion capable of producing a curled food particle having a meat filling covered with dough. U.S. Pat. No. 5,208,059 describes an apparatus and a method to produce dual textured food pieces. The food pieces have cavities filled with a heated, pumpable food material. The above U.S. patents are herein incorporated by reference in their entirety.

[0009] U.S. Pat. No. 5,194,283 describes a composite cheese product having a covered core. The core is relatively softer than the outer covering layer. Both the outer layer and inner core are cheeses and thus are both high fat compositions. The inner core is made softer than the outer layer by increasing the fat content of the inner curd core. This U.S. patent is incorporated by reference in its entirety.

[0010] U.S. Pat. No. 5,643,623 and International Patent Publication No. WO 96/39869 describe a health food product containing a lipid based core used to deliver blends of anti-oxidants such as alpha-carotene, zeta-carotene, phytofluene, phytoene, vitamin C, vitamin E, or curcumin. The antioxidants are fat soluble and are incorporated into the lipid based core. The above U.S. Patent and International patent publication are incorporated herein in their entirety.

[0011] The prior art products are not able to function as a delivery system for various nutritional, functional, or pharmaceutical additive ingredients because the prior art requires significant heat processes and/or acidic conditions would alter or destroy such additive. The present invention, however, does not utilize such harsh conditions. Furthermore, moisture must be controlled in the prior art in order to prevent the deterioration of the inherent nutritional ingredients from spoilage. However, as discussed above, more elaborate packaging materials and techniques, that are required for moisture control by the prior art, are not required by the present invention.